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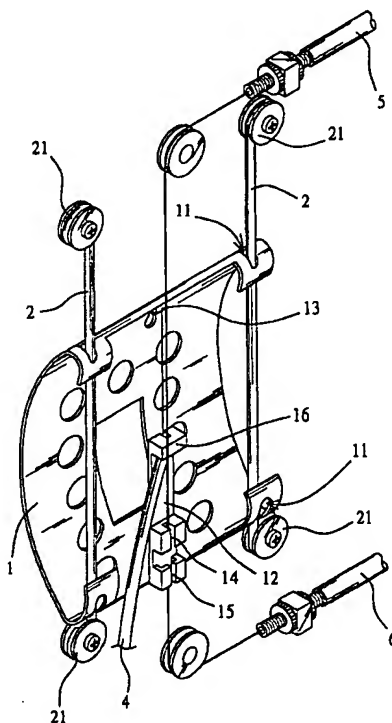
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(54) Titre : DISPOSITIF DE REGLAGE DE DOSSIER DE CHAISE

(54) Title: AN ADJUSTING APPARATUS FOR THE BACKREST OF A CHAIR



(57) Abrégé/Abstract:

An adjusting apparatus for the backrest of a chair comprising an adjusting member connected to and controlled the backrest, a backrest board body having a top and bottom ends at the sides thereof, rails slidably inserted into the backrest, a first guiding cable connected to the top and bottom ends of the board body, a second and a third guiding cables being respectively secured at one end of the board body, thereby the adjusting of the first cable by means of the adjusting member causes the board body to bend or curve, and to release the second and third guiding cable causes an up and down displacement of the board body with respect to the rails, and the board body is adjusted to comfortably support the user in a laying position.

**TITLE: AN ADJUSTING APPARATUS FOR THE BACKREST OF A
CHAIR**

BACKGROUND OF THE INVENTION

(a) Field of the Invention

5 The present invention relates to the backrest of a chair, and in particular to an adjusting apparatus for use to adjust the backrest to conform with and to support the spinal cord of the different users.

(b) Brief Description of the Prior Art

 As the body structure for everyone is different, the shape of curvature
10 of the spinal cord for each one is also different. Conventional chairs with backrest to support the back or spinal cord of the user are normally not adjustable in order to suit everyone. Most of the time, the backrest provides no function to the users in supporting the backbone of the body for the reason that the backrest is not designed with respect to ergonomic engineering.
15 Even some backrests of chairs are designed ergonomically, these backrests cannot suit everyone for the reasons that these backrests cannot be adjusted to fit the curvature of the spinal cord of all users. Accordingly, it is a main object of the present invention to provide an adjusting apparatus for the backrest of a chair, which can adjust the curvature of the backrest to suit the
20 spinal cord of the users.

SUMMARY OF THE PRESENT INVENTION

In order to overcome the disadvantages of conventional backrest, the present invention provides an adjusting apparatus for the backrest of a chair comprising an adjusting member connected to and controlled the backrest, a
5 backrest board body having a top and bottom ends at the sides thereof, rails slidably inserted into the backrest, a first guiding cable connected to the top and bottom ends of the board body, a second and a third guiding cables being respectively secured at one end of the board body, thereby the adjusting of the first cable by means of the adjusting member causes the board body to bend or
10 curve, and to release the second and third guiding cable causes an up and down displacement of the board body with respect to the rails, and the board body is adjusted to comfortably support the user in a laying position.

It is an object of the present invention to provide an adjusting apparatus for the backrest of a chair, wherein the board body is closely with the spinal
15 cord of the user by means of the first guiding cable, thereby the back of the user lying on the backrest is sufficient supported.

A further object of the present invention is to provide an adjusting apparatus for the backrest of a chair, wherein the height of the backrest can be adjusted by the use of the second and the third guiding cable, thereby the
20 support position to the user can be adjusted based on the sitting posture of the

user.

Other objects as well as the numerous advantages of the adjusting apparatus for the backrest of a chair in accordance with the present invention will become apparent from the following detailed description and the
5 accompanying drawing, in which:

BRIEF DESCRIPTION OF THE DRAWING

Fig. 1 is a perspective view of the adjusting apparatus for the backrest of a chair in accordance with the present invention.

Fig. 2 is a perspective exploded view of the adjusting member for the
5 backrest of a chair in accordance with the present invention.

Fig. 3 is a schematic plan view of the adjusting apparatus for the backrest of a chair in accordance with the present invention.

Fig. 4 is a schematic view showing the bending curvature in accordance with the present invention.

10 Fig. 5 is a schematic view showing the up down adjustment of the adjusting apparatus in accordance with the present invention.

Fig. 6 is a sectional view of another adjusting apparatus for the backrest of a chair in accordance with the present invention.

Fig. 7 is a schematic plan view of the adjusting member for the
15 backrest of a chair in accordance with the present invention.

Fig. 8 is a perspective exploded view of the another adjusting member for the backrest of a chair in accordance with the present invention.

Fig. 9 is a sectional view of the adjusting member for the backrest of a chair in accordance with the present invention.

20 Fig. 10 is a schematic plan view showing the adjustment of

displacement of for the backrest of a chair in accordance with the present invention.

DETAILED DESCRIPTION OF THE PRESENT INVENTION

Referring to Fig. 1 of the present invention, there is shown an adjusting apparatus for the backrest of a chair comprising a backrest board body 1 having a top and bottom ends at the sides thereof and the board body 1 is a flexible board body which is slightly curved, a rail 2 slidably inserted into the backrest and a first guiding cable 4 is connected to the top and bottom ends of the two lateral sides of the board body 1. A second and a third guiding cable 5, 6 are respectively secured in opposite direction to a securing end on the board body 1. Thus, the adjusting of the first cable 4 in its length by means of an adjusting member causes the board body to bend or to curve, and the releasing of second and third guiding cable 5, 6 causes the up and down displacement of the board body 1 with respect to the rails 2, thereby the board body 1 can be adjusted to a position to comfortably support the users.

In accordance with the present invention, the board body 1 is a flexible curved board body, having the top and bottom ends of the two sides thereof are provided with holes 11, and an extension board 12 with a first slot 13 is provided to the corresponding top and bottom ends. The extension board 12 is provided with two corresponding second 14 and third slot 15 and a mounting member 16 for the guiding cables.

In the preferred embodiment, the rail 2 is a long rod body inserted within

a hole 11, and the adjusting member 7 (as shown in Fig. 2) is a threaded rod 71 with a nut 72 which is inserted into a housing body 73 for the adjusting of cables. A U-shaped peg 78 is clipped at the two sides of the neck portion of the screw rod 71, and one side of the housing body 73 is protruded with a
5 spring disc 74 for the mounting of a swinging engagement gear 75 to correspond to a fan-like teeth 77 within an adjusting nut 76. A sound is produced when the adjusting nut 76 is adjusted.

As shown in Fig. 3, a pad 21 is used to mount the ends of the rails onto the backrest 3 via the hole 11 on the board body 1 such that the rail 2 is kept a
10 distance from the backrest 3. The two adjusting members 7 are respectively mounted to the first and the second guiding cables 4,5 and the guiding tube of the first guiding cable 4 urges the mounting portion 16 of the board body 1. The other end of the guiding cable is located within the first slot 13 and the guiding protrusion of the second guiding cable 5 is adapted at the second slot
15 14, and the guiding cable protrusion of the third guiding cable 6 is located within the third slot 15, and the end terminal of the third guiding cable 6 is connected from one end to the other end of the spring 8 mounted on the backrest 3. Finally, the two adjusting members 7 are mounted onto the seat.

In accordance with the present invention, when the first guiding cable 4 is
20 pulled via the adjusting member 7, the exposed length of the first guiding

cable 4 is changed and the straight distance at the two ends of the board body 1 will correspondingly change. Thus, when the straight distance of the two ends of the board body is shorter, the curvature of the board body 1 is larger (as shown in Fig. 4). When the straight distance of the two ends of the board body 1 is longer, the curvature of the board body 1 is smaller. Thus, the curvature of the board body 1 is adjusted to comfortably suit the user. When the adjusting member 7 releases the second guiding cable 5, the spring 8 of the third guiding cable 6 will react in accordance with the guiding cable 5. When the second guiding cable 5 is pulled towards the board body 1, the board body 1 will move upward along the rails 2. Otherwise, when the second guiding cable 5 is released, the spring 8 causes the third guiding cable 6 to be pulled and the board body 1 will move downward along the rails. The control of the board body 1 will correspondingly control the position of the backrest 3 (as shown in Fig. 5). As a result, the backrest 3 can be adjusted to suit the sitting posture of the user in order to provide a comfort sitting.

As shown in Fig. 6, the adjusting member 7 comprises the screw nut 72 mounted to the screw rod 71 such that the second and the third guiding cables 5, 6 are engaged in opposite direction. When the adjusting nut 76 is adjusted, the up and down movement of the board body 1 is adjusted (as shown in Fig.

7).

In order to allow smooth operation of the second and the third guiding cables 5, 6, a pulley 22 is located at the turning point on the board body 1, and the end terminal of the guiding tube of the second and third guiding cables 5, 6 are mounted on an adjusting seat 23, such that during installation, the exposed length of the cables 5, 6 can be adjusted.

Figs. 8 and 9 are further embodiments of the present invention. There is shown the adjusting nut 76 is connected to a rod 761 and pivotally mounted to the housing body 73 such that the nut 76 can move in axial direction. The rod 761 further mounted with a main gear 762 having a screw rod 71 connected to a driven gear 711 and a screw nut 72 at the front and rear sides of the main gear 762. There are slots 79 provided to the screw nut 72. When the adjusting member 7 is used to adjust the board body 1, the second and the third guiding cables 5, 6 are respectively mounted to the board body 1 via the slots 79. The screw nut 72 of the screw rod 71 is used for the first guiding cable 4 to be connected to the board body 1. Thus the adjusting of the board body 1 will move the driven gear 711 of the screw rod 71 corresponding to the adjusting of the main gear 762 of the adjusting nut 76. Thus, the curvature of position of the board body 1 is adjusted (as shown in Fig. 9).

The pivotal position of the rod 761 of the adjusting member 7 on the

housing body 73 is provided with a steel bead 731 with spring force, and a recess 763 is provided on the rod 761 corresponding to the driven gear 711 such that the recess 763 can hold a steel bead 731 as a positioning force to avoid the dislocation of the adjusting nut 76.

- 5 The interior of the housing 73 of the adjusting member 7 is provided with a pulley 732 at the turning point of the guiding cable so as to minimize frictional force between the guiding cable and the housing body 73.

 In another preferred embodiment, an electrical control motor 70 is provided to the end of the rod 761 of the adjusting nut 76, and a plurality of
10 sensors 721 are mounted to the rod 761 of the adjusting nut 76 and the screw nut 72. The distance between two corresponding driven gear 711 of the housing body 73 and the dead points at the up and down position of the moving space of the screw nut 72 are provided with sensing plates 722 to connect to an IC board. The motor 70 is controlled by a switch 701.
15 Accordingly, before the switch 701 is pressed, the adjusting member 7 is kept manual control. When the switch 701 is pressed, the corresponding screw nut 72 of the corresponding adjusting nut 76 is proceeded to transmission (as shown in Fig. 10)

 The rails 2 for the up and down movement of the board body 1 are
20 provided with a plurality of wheels within guiding slots so as to guide the

board body 1.

It will be appreciated that the foregoing is considered as illustrative only of the principles of the invention and numerous modification and changes will readily occur to those skilled in the art, it is not desired to limit the
5 invention to the exact method described, and accordingly, all suitable modification and equivalents may be resorted to, falling within the scope of the invention.

I CLAIM:

1. An adjusting apparatus for the backrest of a chair comprising an adjusting member connected to and controlled the backrest, a backrest board body having a top and bottom ends at the sides thereof, rails
5 slidably inserted into the backrest, a first guiding cable connected to the top and bottom ends of the board body, a second and a third guiding cables being respectively secured at one end of the board body, thereby the adjusting of the first cable by means of the adjusting member causes the board body to bend or curve, and to release the second and
10 third guiding cable causes an up and down displacement of the board body with respect to the rails, and the board body is adjusted to comfortably support the user in a laying position.
2. An adjusting apparatus for the backrest of a chair as set forth in Claim 1, wherein
15 (a) the board body is a flexible and slightly curved board body, having the top and bottom ends of the two sides thereof are provided with a through hole, and a first slot and an extension board are provided to the corresponding top and bottom ends, the extension board is provided with two corresponding second and third slot, and a mounting member
20 for the guiding cable tube;

- (b) the rails are long rod bodies inserted within the through hole;
- (c) an adjusting member is a screw rod with a screw nut and are inserted into a housing body for the adjusting of cables, and an U-shaped peg is clipped at the two side of the neck portion of the screw rod, and one side of the housing body is protruded with a spring disc for the mounting of a swinging engagement gear to correspond to a fan-like teeth within an adjusting nut, and a sound effect is provided when the adjusting nut is adjusted.
- 5
3. An adjusting apparatus for the backrest of a chair as set forth in Claim 2 or 3, wherein the top and bottom of the two sides of the board body are provided with a plurality of wheels, which correspond to a plurality of guiding slots for engagement such that the board body is moved with the wheels along the guiding slots.
- 10
4. An adjusting apparatus for the backrest of a chair as set forth in Claim 2, wherein a pulley is provided at a turning point where the second and the third cable are connected to the board body, and the end terminals of the guiding cables are connected to an adjusting seat. for the adjusting of the exposed length of the second and the third guiding cables.
- 15
5. An adjusting apparatus for the backrest of a chair as set forth in Claim 2,
- 20

wherein the guiding cable mounting screw of the adjusting member is provided with two opposite direction slots, such that the two slots of the adjusting member are mounted to the second and third slot of the backrest, thereby the adjusting of the adjusting member controls the movement of the board body.

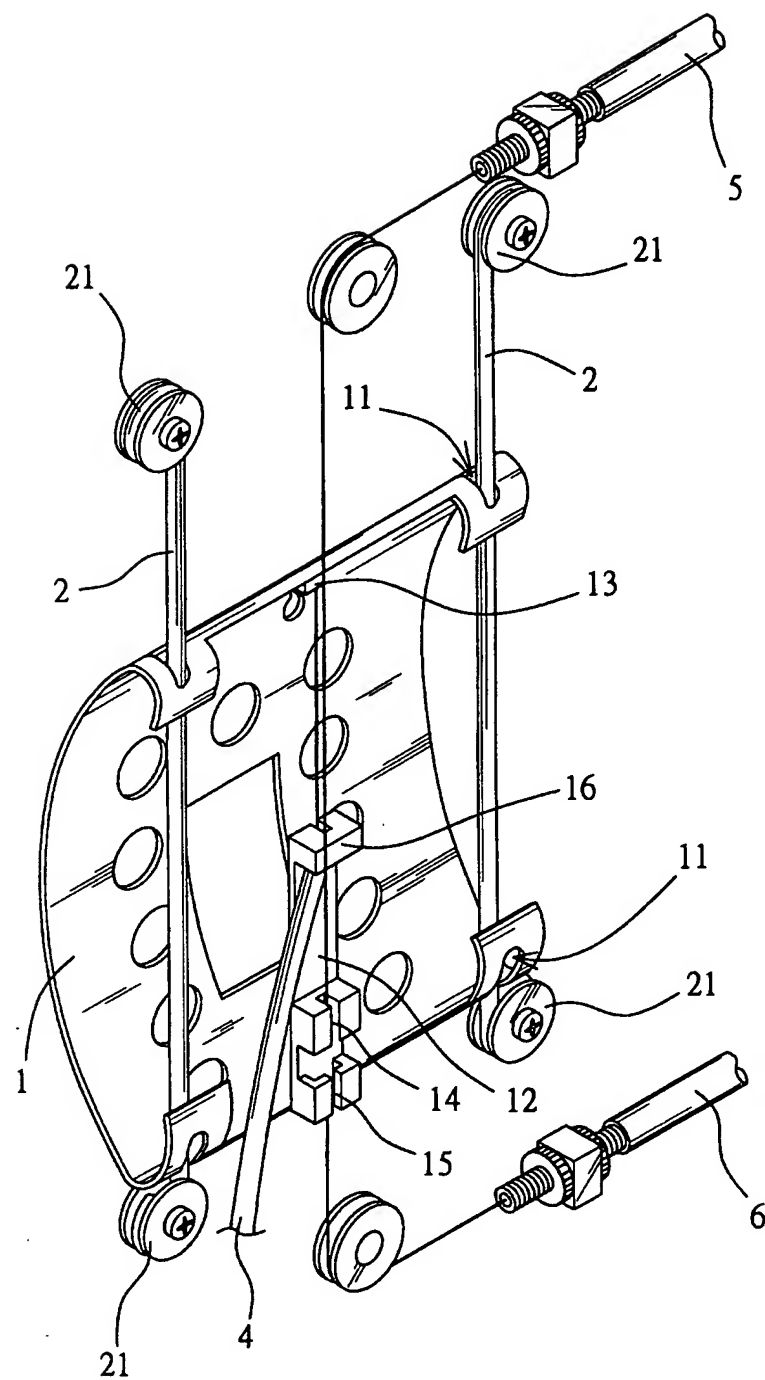
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6. An adjusting apparatus for the backrest of a chair comprising an adjusting member connected to and controlled the backrest, a backrest board body having a top and bottom ends at the sides thereof, rails slidably inserted into the backrest, a first guiding cable connected to the top and bottom ends of the board body, a second and a third guiding cables being respectively secured at one end of the, and an adjusting nut is connected to a rod which is pivotally mounted to a housing body, and a main gear having two sides are mounted with a driven gear connected to a screw rod and the nut, the nut is provided with two opposite direction slots such that the second and the guiding cable are respective connected to the board body, the other threaded nut is used for the guiding cable to connect to the board body.
- 10
- 15
7. An adjusting apparatus for the backrest of a chair as set forth in Claim 6, wherein the end terminal of the rod of the adjusting nut is provided with a motor having IC control and the two threaded rods and the rod
- 20

for the adjusting nut are provided with sensor and a plurality of sensing disc are provided in between the dead point at the top and bottom of the moving space of the threaded nut and the that at the two driven gears, and the motor is control by a switch.

- 5 8. An adjusting apparatus for the backrest of a chair as set forth in Claims 6 or 7, wherein the rod having mounted on the housing body is with an urging steel bead such that every recess is adapted to a bead to provide a positioning force and to prevent the random movement of the adjusting nut.
- 10 9. An adjusting apparatus for the backrest of a chair as set forth in Claim 6 or 7, wherein a pulley is provided at the turning region of the cable from the housing body of the adjusting member.
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ABSTRACT OF THE DISCLOSURE

An adjusting apparatus for the backrest of a chair comprising an adjusting member connected to and controlled the backrest, a backrest board body having a top and bottom ends at the sides thereof, rails slidably inserted into
5 the backrest, a first guiding cable connected to the top and bottom ends of the board body, a second and a third guiding cables being respectively secured at one end of the board body, thereby the adjusting of the first cable by means of the adjusting member causes the board body to bend or curve, and to release the second and third guiding cable causes an up and down displacement of the
10 board body with respect to the rails, and the board body is adjusted to comfortably support the user in a laying position.



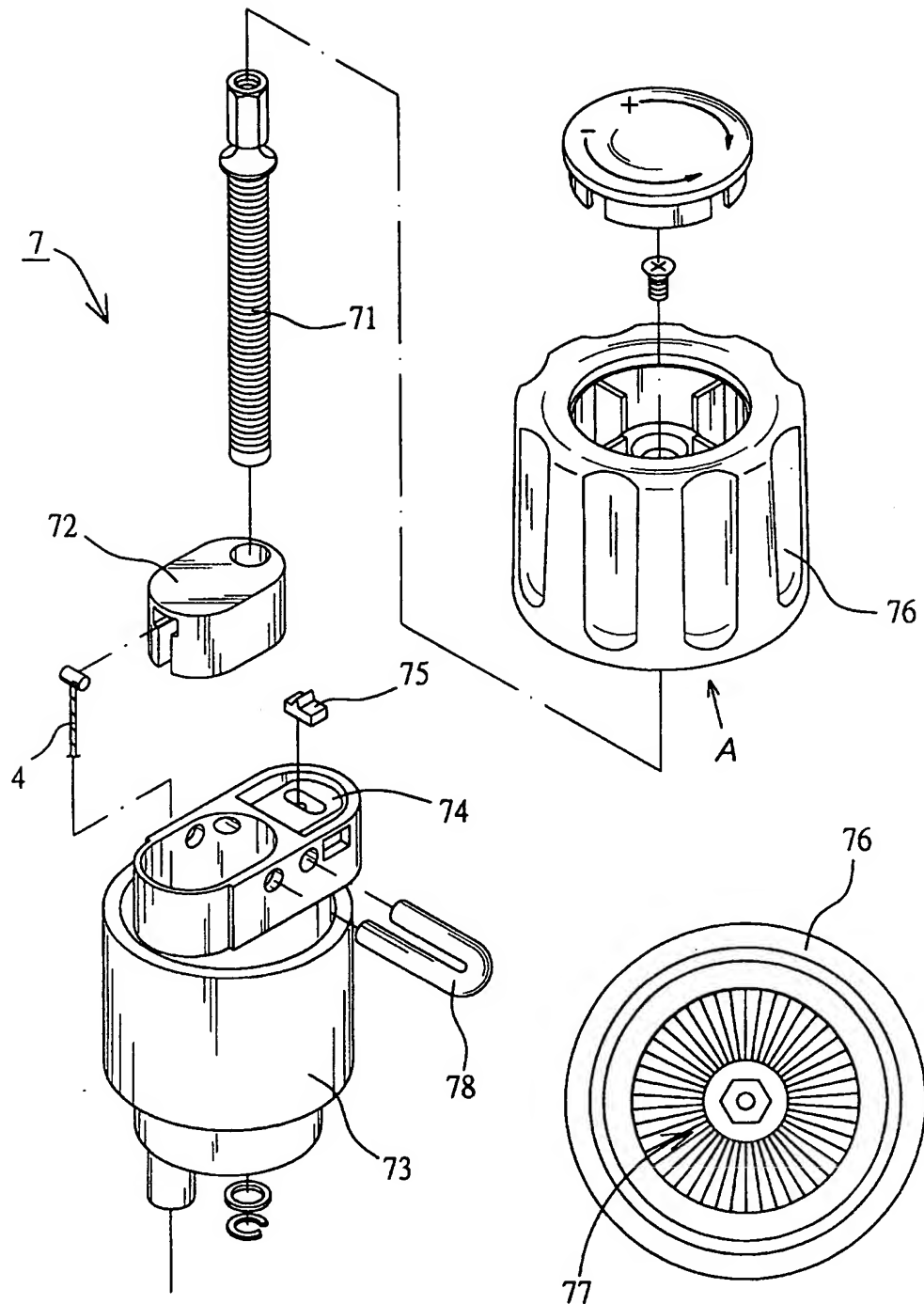


FIG.2

A

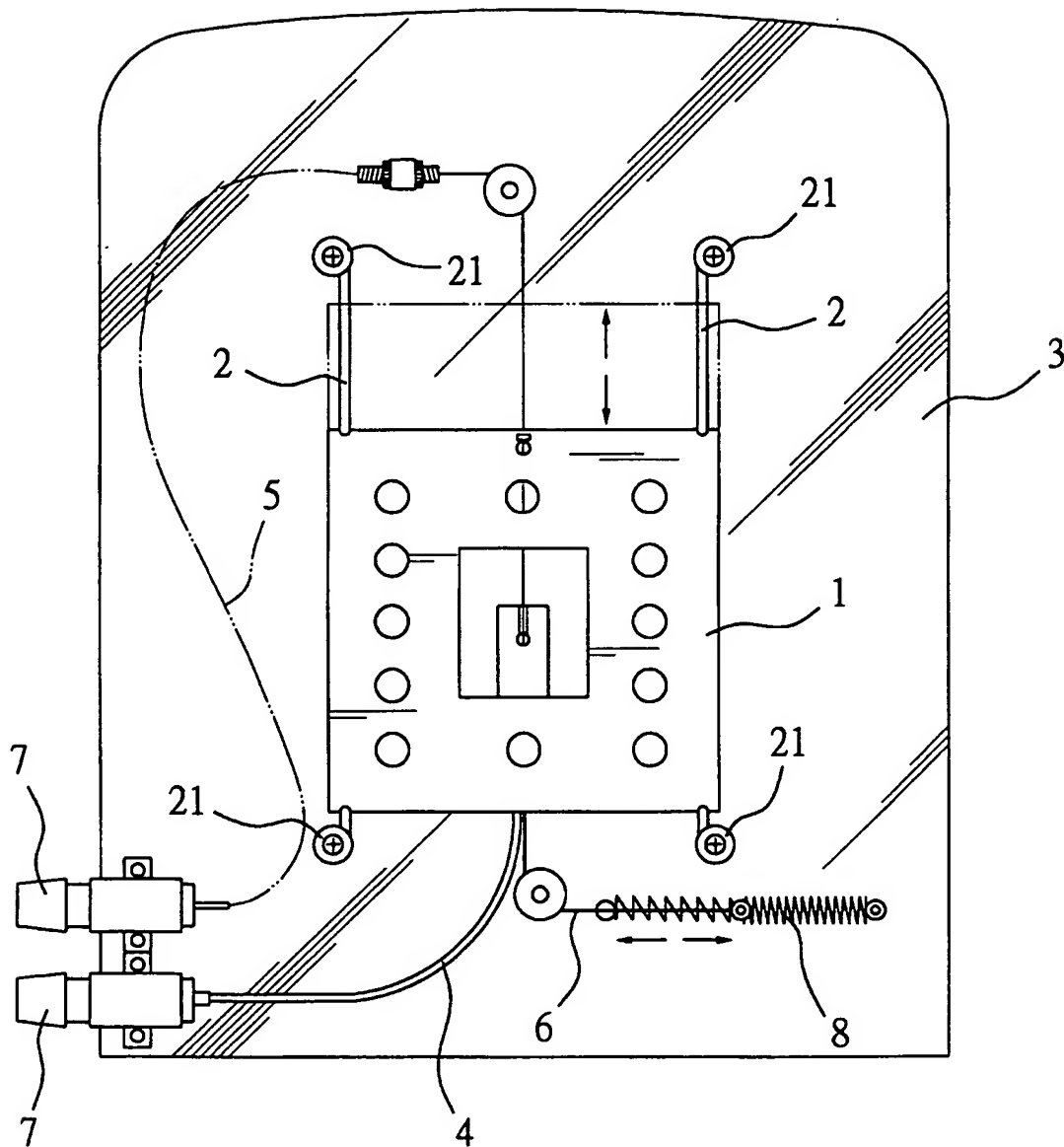


FIG.3

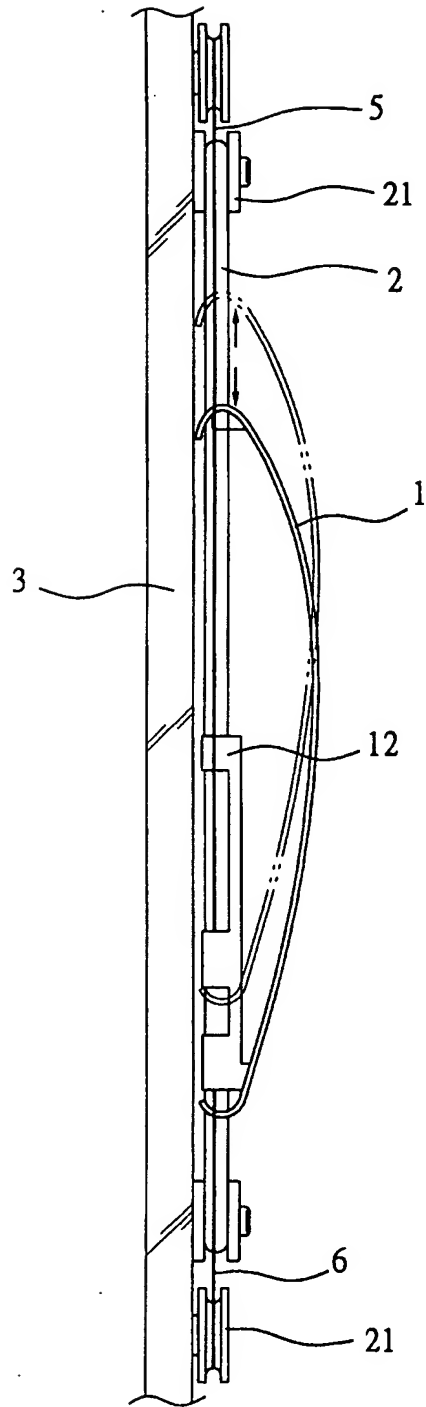


FIG. 5

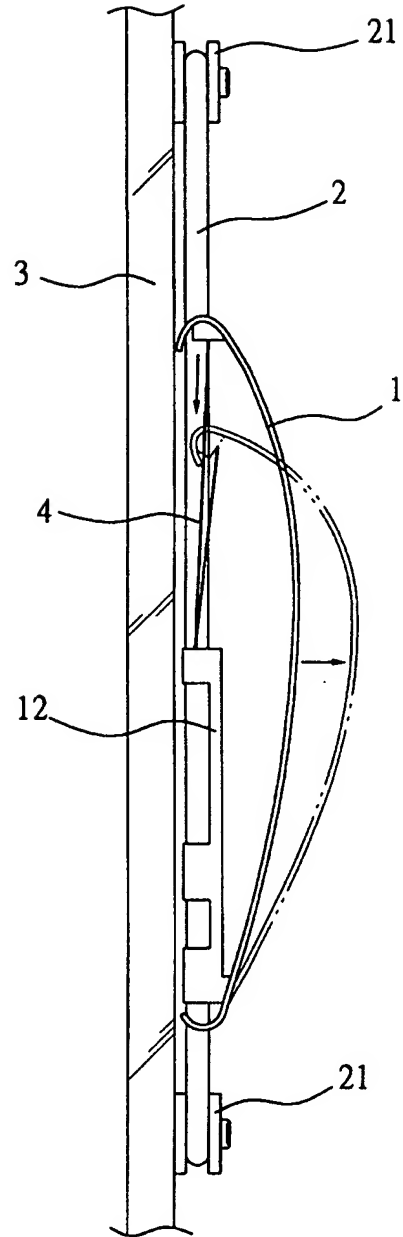


FIG. 4

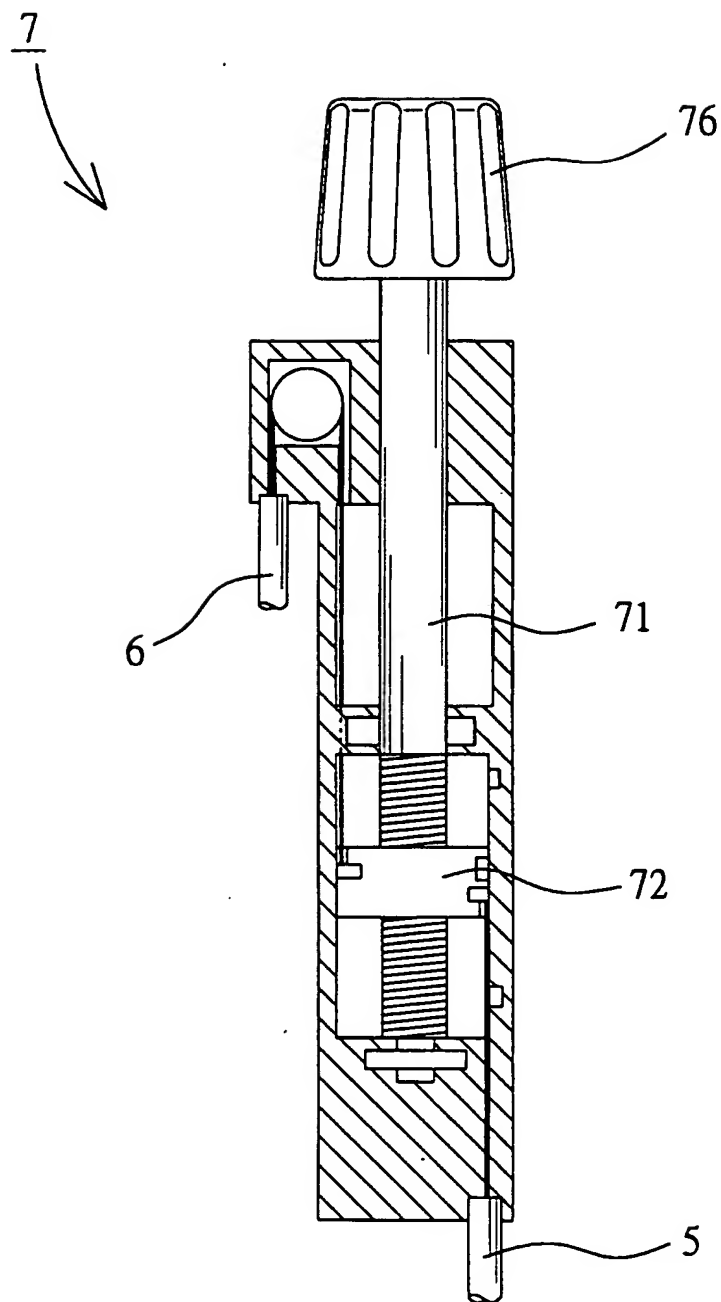


FIG.6

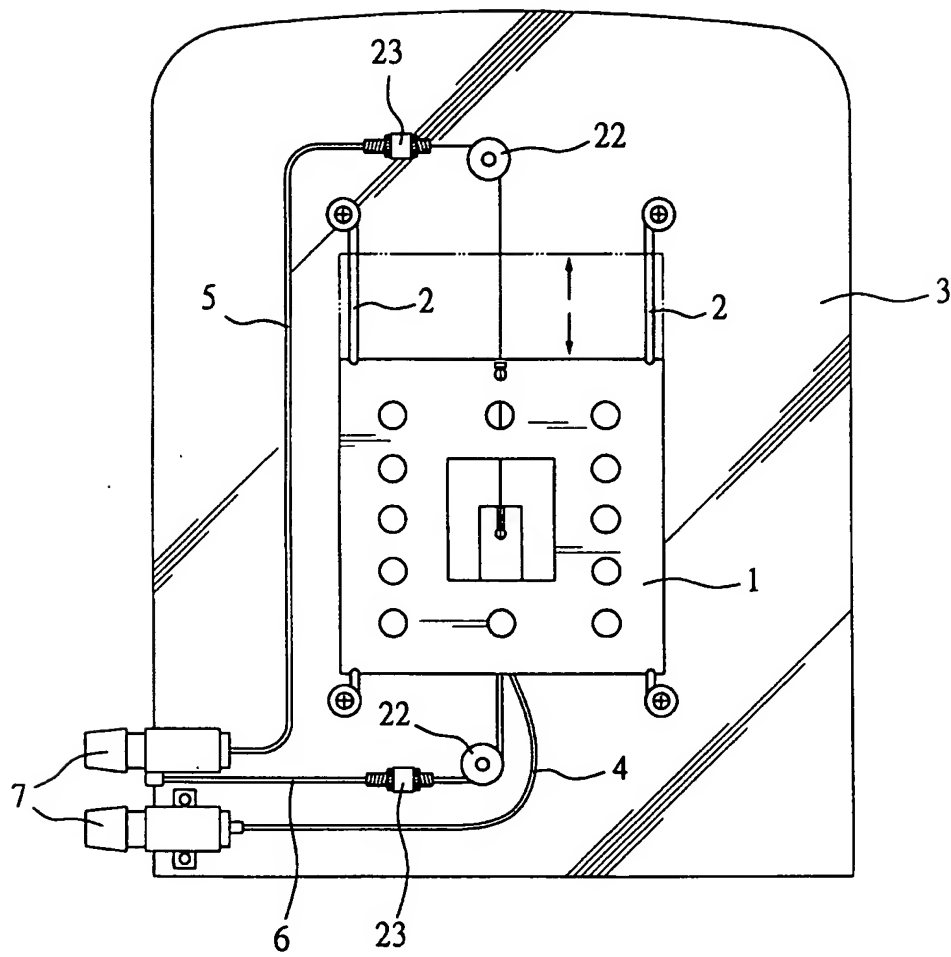
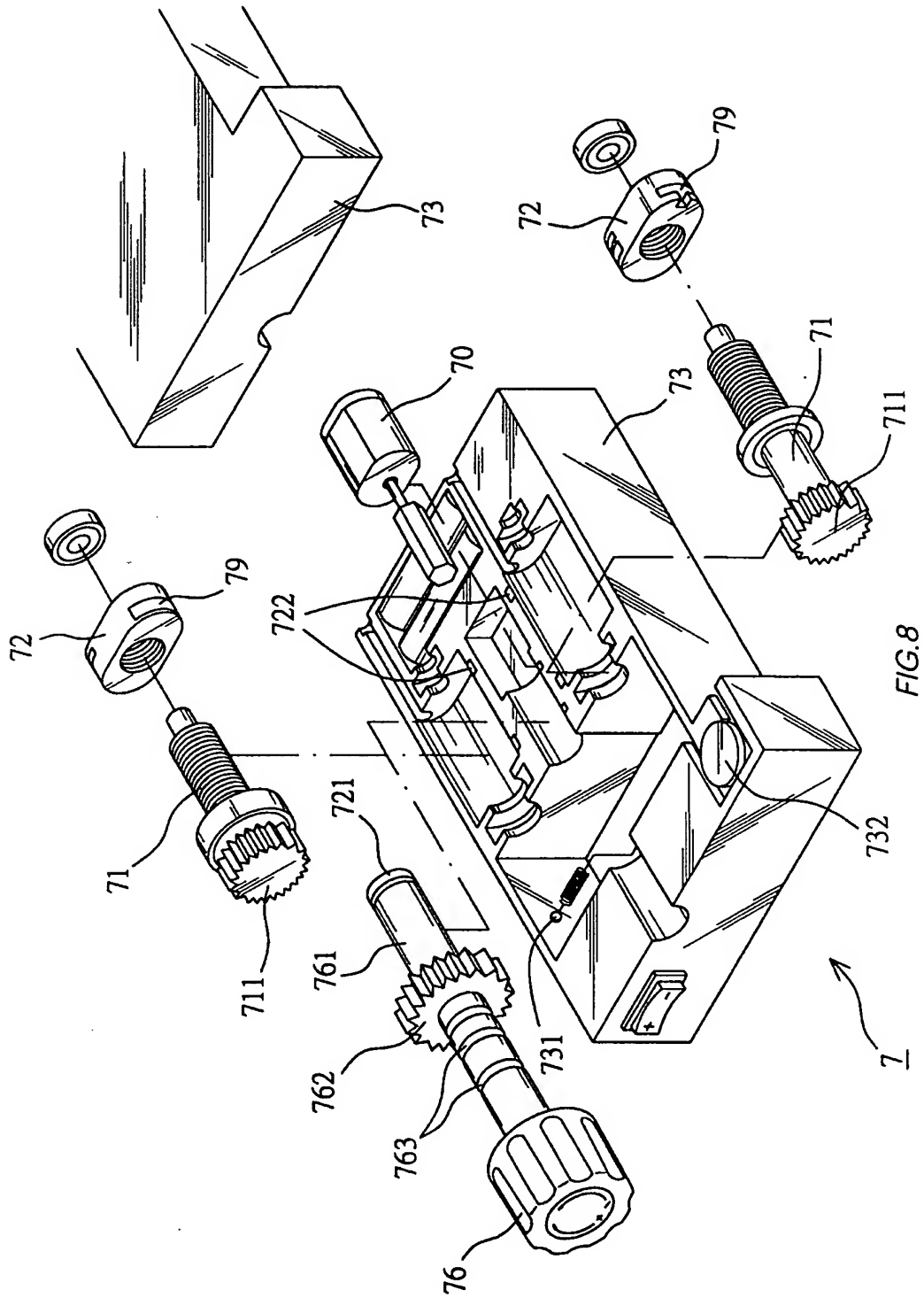


FIG.7



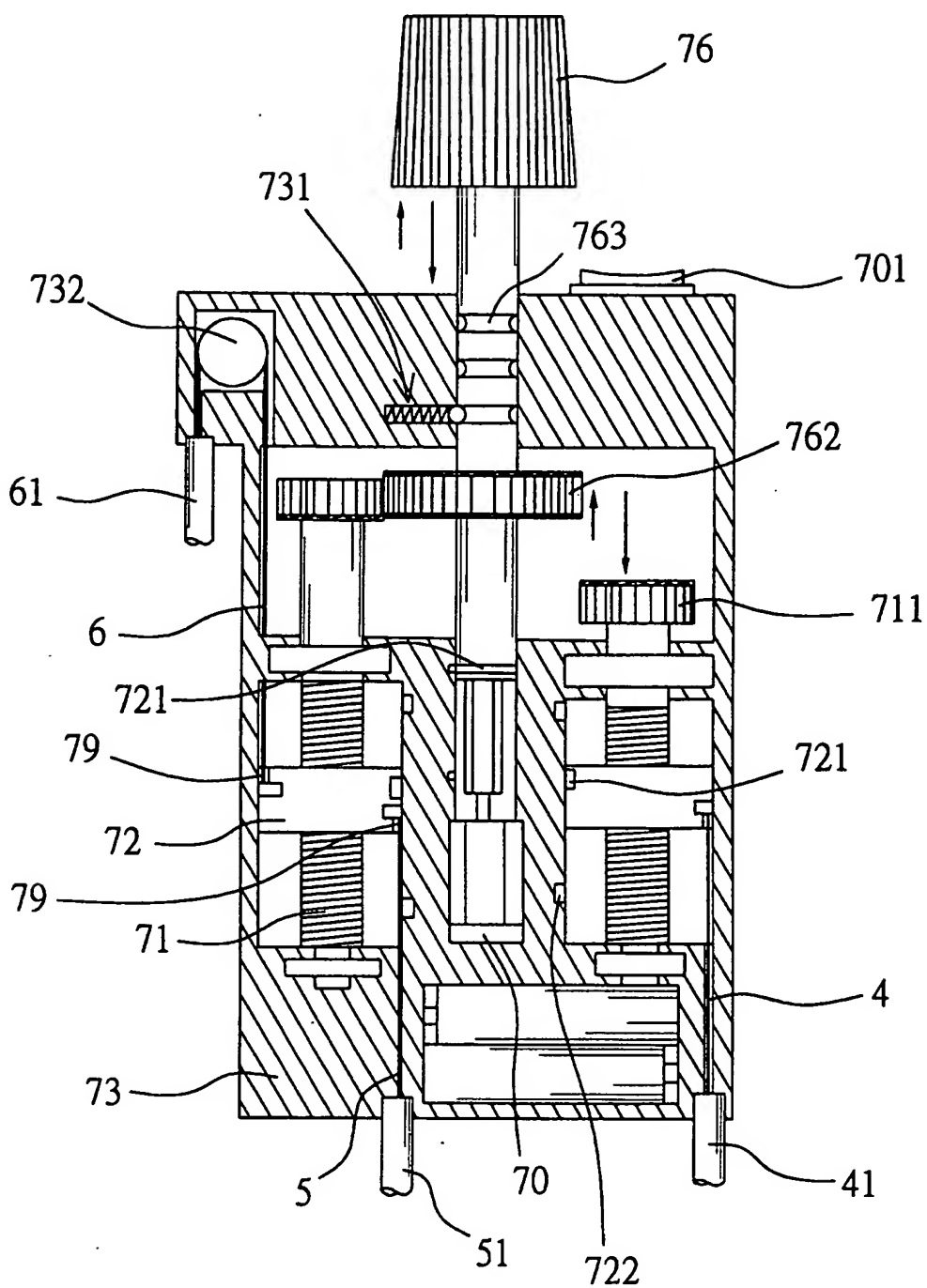


FIG.9

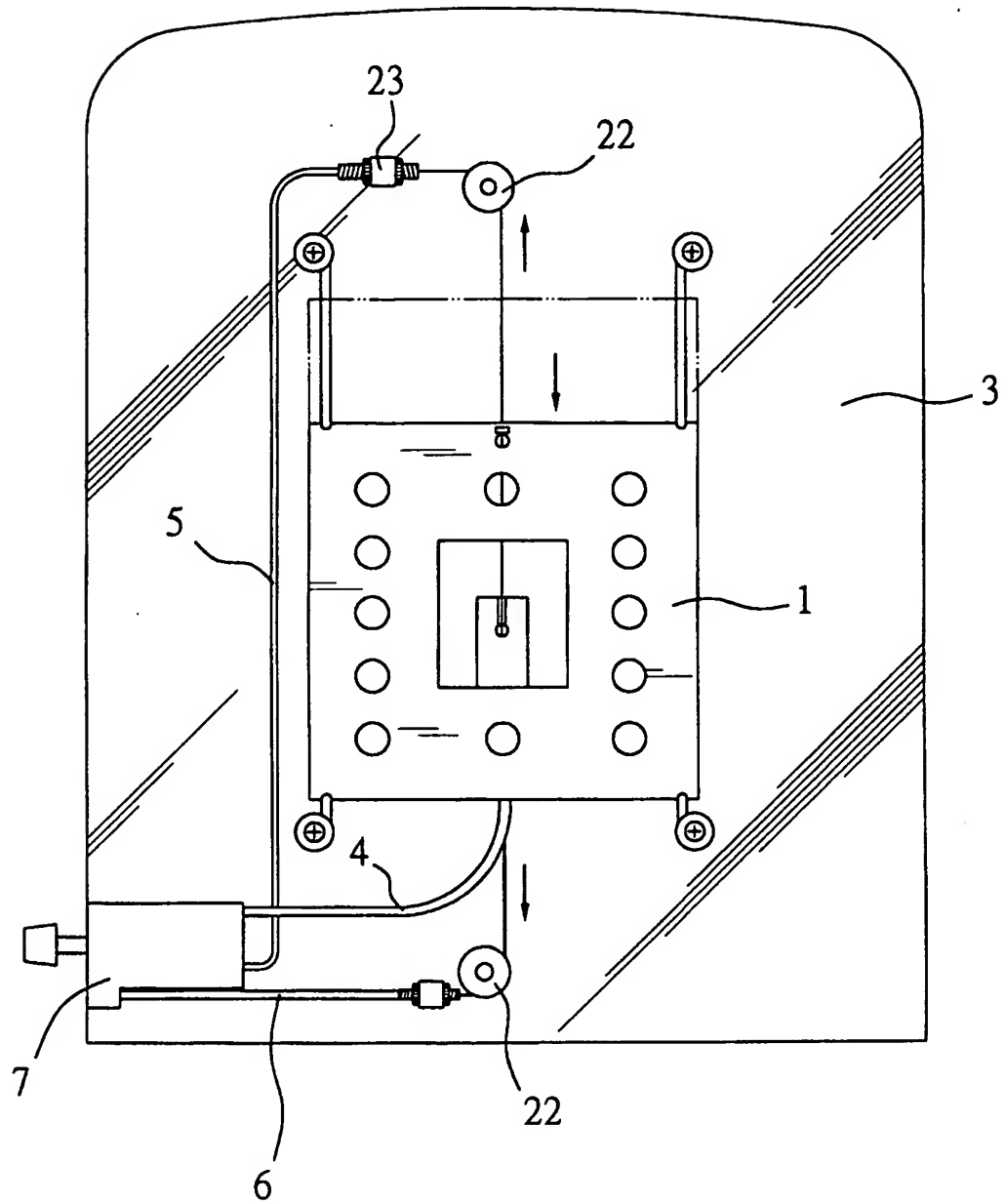


FIG. 10